Simple A/B Test for precise Advertising in Nigeria

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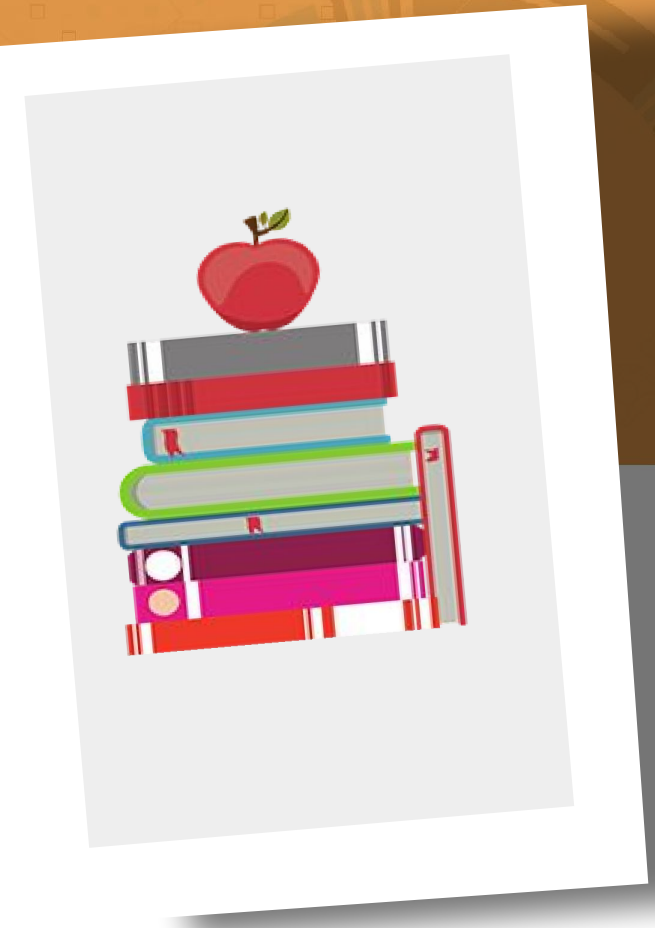

OUTLINE

- The Advertising space in Nigeria (challenges, user distribution, reception to change)
- Value proposition (right users, right Ad, right place, right time)
- Good Products, bad products...
- A/B testing (ML models, Ad Creatives, demography)
- Analyzing the results and generalization
- Notebook Demo
- Conclusion

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- WORK
  - TERRAGON GROUP
    - MACHINE LEARNING ENGINEER
  - SOFT THREAD CONSULTANCY
    - DATA AND TALENT CONSULTANT
- SPORTS
  - ATHLETE
    - 100M RECORD (WASN'T RECORDED)
  - FOOTBALL
    - BARCELONA FAN (HUGE LIONEL MESSI FAN)
- SOCIAL
  - MUSIC (HUGE JCOLE AND BURNA BOY FAN)
  - MOVIES/SERIES (GAME OF THRONES)

The Advertising Space in Nigeria

General mistake: we are a 200 million people population

If I am able to sell my product to 1% (2 000 000)of the population, I will be fine.

Actual reality: 50% (100 million) of the population use the internet (web and mobile)

12% are active mobile social users.

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The Advertising Space in Nigeria… contd

That means every B2C firm (~50000) in Nigeria is fighting to sell their products to approximately 12% (12 000 000) of online and active mobile social users (that's 240 users per firm). Amongst them are brands in:

- Financial service Institutions (FSIs)
- Small and Medium sized enterprises (SMEs)
- Fast Moving Consumer Goods (FMCGs)
- Telecommunication firms (Telcos)

Value Proposition (Dominant Offline Users)

Out of the 12% mobile social users available, majority are users who do not use smartphones (they use other channels like USSD or Opera on low end devices). Another problem right? This presents an opportunity to help these brands optimize their ads targeting approach.

You basically want to have high conversions when selling your product.

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Good Products, Bad Products… experiments to the rescue!

Typically, brands with good products look for ways to keep their existing users and potentially scale up.

On the flip side, brands with bad products either decide to take feedback or product recommendations before doing marketing. Unfortunately, that's not always the case. They want their products out there.

Some elements of bad products are the UI/UX, app size, unclear creative and landing page.

Here's where experimentation comes in. You want to make recommendations at a minimum cost.

EXPERIMENTATIONS(SIMPLE A/B TESTS)

Usually the baseline for starting out. You might have an idea of what works/doesn't work, but there is need to validate your thought process (hypothesis in this case).

The process of carrying out simple tests (A/B) involves comparing two things.

- What you already know (old)
- The alternative/other ideas (new)

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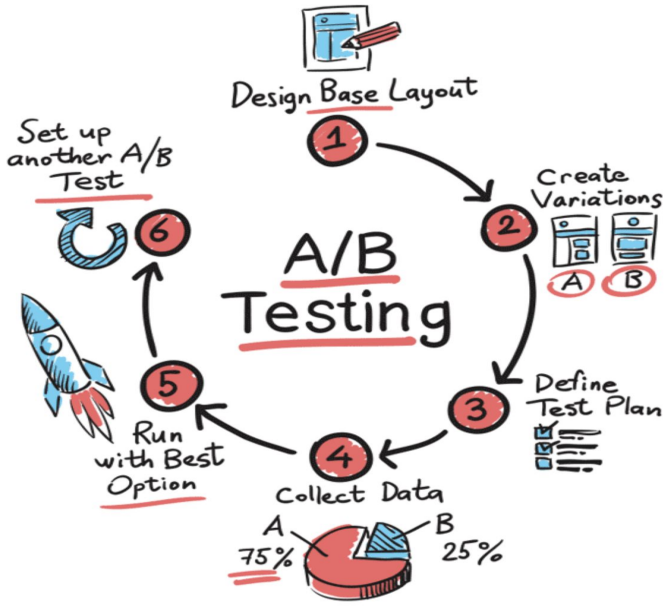

The Process...

- Formulation of hypothesis
- Design of experiments and data collection
- Inference/Conclusions

Simple A/B tests are applicable in many ways by comparing

- One landing page against the other
- Ad creatives conveying campaign messages
- The performance of Machine Learning models (e.g old model vs new model)

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Experimenting on a log_reg model(old) vs keras model(new)

Roughly, there are two regimes of machine learning model evaluation.

- Offline
- Online

Offline happens during the prototyping phase when one tries different evaluation metric (precision, recall, f1) and hyperparameter tuning.
Online evaluation basically happens on live data (users).

Log_reg predictions for a user to click on an Ad

	users	predictions
0	user A	0.45
1	user B	0.93
2	user C	0.61
3	user D	0.76
4	user E	0.39

Keras model predictions for a user to click on an ad

	users	predictions
0	user A	0.51
1	user B	0.87
2	user C	0.65
3	user D	0.68
4	user E	0.41

Let’s review some concepts

- **Hypothesis:** Is the statistical method used to make decisions using experimental data. A typical hypothesis for A/B testing is that the new version of a product is better than the old version.
- **Treatment Group:** Is a group of subjects exposed to a specific treatment. A new version of a product or creative in this case exposed to subjects.

- **Control Group:** Is a group of subjects exposed to no treatment. The prior/default version of a product or creative that the subjects are used to. Nothing changes.
- **Null & Alternative hypothesis:** Default statement vs the counter statement. No real difference between the machine learning models vs there’s a real difference (Keras will give me more conversions)

Experimenting on the performance of two machine learning models (old model vs new model)

Refer to notebook for step by step implementation.

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Thanks

Got Questions?

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